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great difficulty in securing water enough to quench their thirst, or fit to drink. Fragments of the rock are reported to be frequently permeated with sulphur, and to present the appearance of a calcined rather than a lava rock.

The hemlock of south-eastern Alaska has been favorably reported on by tanners as unusually rich in tannin. Important beds of white marble have been reported from several points, and will eventually be found, probably, scattered through the coast-region from Port Mulgrave to the eastern boundary. That at Sitka, though never worked, has been frequently visited. That near the surface is inferior, but experts predict an improvement farther in.

The extension of the government over the territory proceeds very slowly. Loud complaints are heard from various quarters, that, as at Kadiak, no official intimation of the organic act promulgated in May, 1884, has yet been received. There is no doubt, that, as in previous dealing with our northern colony, an official lassitude has prevailed, for which various explanations are confidently offered. It is to be hoped that new appointments, when made, will, as in the case of the new executive, be of men qualified by energy and acquirements to advance the interests of the region. It certainly cannot be a benefit to any territory, that officers who are drunkards, ex-convicts, or employés of a private monopoly, should represent the government. Meanwhile the eastern part of Alaska has become the scene of pretty active antagonisms between miners, traders, and missionaries. Theoretically, every man is in favor of missionary work; but when, as in the present case, they take up available land for their schools, teach the Indian to work, and to build civilized houses, to ask a good price for his furs and fish, and on no account to sell his young daughters to white men, as was formerly the practice,—such innovations do not meet with universal favor.

The Patterson is surveying in the eastern district for the coast survey. Commander Coghlan, U.S.N., has furnished a number of useful reconnaissance sketches of harbors, straits, etc., which are being issued by the coast survey, together with sailing-directions.

THREE PHYSICAL TEXT-BOOKS.

EVERY teacher of physics is familiar with the looks of the old-fashioned text-book of natural philosophy. In the early pages come a picture of a wagon on a hillside (a pretty picture, if not for the marring parallelogram hanging from the back), and an air-pump of a pattern only found now as a pair of dingy brass cylinders wabbling on what was a 'high-

Lessons in elementary practical physics. By BALFOUR STEWART and W. W. HALDANE GEE. Vol. i. General physical processes. London, Macmillan, 1885. 16+271 p., illustr. 12^o.

Properties of matter. By P. G. TAIT. Edinburgh, Black, 1885. 8+320 p., illustr. 12^o.

Lectures on some recent advances in physical science, with a special lecture on force. By P. G. TAIT. London, Macmillan, 1885. 3d ed. 20+368 p., illustr. 12^o.

ly polished' mahogany base; and, further on, an electrical machine is figured, and such an electrical machine as Franklin might well have called 'a vast improvement.' The text matches the cuts, — an array of facts and figures derived from experiments long since superseded.

The question has been raised whether the modern knowledge can be made to take the place, in the mental drill of the schools, of the course so long honored. In the old 'Natural philosophy' the facts were so baldly stated, and were served in such a convenient shape for memorizing by the measureful, that it is not strange that one not especially attracted to the study should be able to say, in his after-school years, that he did not remember one word of it all.

There have cropped up, of late years, two kinds of physical text-books in place of the one now fortunately passing off the stage. It is hard to say which is first. There is the book intended as a guide in the laboratory, and of this class is the 'Practical physics' of Stewart and Gee; and there are such books as 'Properties of matter,' and 'Recent advances in physical science,' by Tait, which are meant as true 'text-books' for the capable teacher. It would never do to place either of the last two books in the hands of a machine teacher. A fearful medley of ideas would arise if the pages of 'Properties of matter' were dealt out by the measured stint to be 'learned'; and with 'Recent advances,' it must be feared that the result would be *nil*, so far as the education of the pupil went.

But with a proper guide, one able to introduce a few experiments to illustrate the points in discussion, to refer occasionally to collateral matters, and to hold up one end of a discussion if such should fortunately arise, either of the books by Tait will be found a true natural philosophy. The 'Properties of matter,' treating as it does of hypotheses as to the structure of matter, time, and space, gravitation, elasticity, compressibility of gases, liquids and solids, and of capillarity, and the phenomena of diffusion, will be found full of pithy, suggestive material,—material which will give rise to discussion, and which can be reasoned upon and talked about. The book is one which can be readily used to give the subject of physics a live interest for the instruction in the classroom. It is to be regretted that the author has opened the book with two chapters which are of 'a very miscellaneous character'; and it is not easy to understand why reference to equipotential lines

should be made, as it is, at the end of the chapter on time and space. But, leaving aside all captious criticism, it is safe to say that 'Properties of matter' is one of the best introductory text-books of physics of which we are as yet possessed.

Whether the lectures on 'Recent advances in physical science' can be used in the classroom, may be questioned. Of the value of the book for collateral reading, there can be no question. This is well enough shown in the fact that we now have the third edition. The desire to deduce much of our knowledge of physical principles from Newton's writings is apparent on many pages of the book, and has given rise to a discussion which is referred to in the preface.

The 'Practical physics,' of which we are promised three volumes,—the first only giving an account of general physical processes,—is intended as a guide for laboratory work. The explanations are clear, and the matter and instruments referred to are such as one actually meets in practice. The book is given up to a description of the ways to measure length and mass; the determination of density; the testing of the laws of elasticity, tenacity, and capillarity; and the measurement of atmospheric pressure, time, and the force of gravity. At the end is given an appendix on the selection, conduct, and discussion of operations suitable for the physical laboratory. The other volumes planned are to be devoted to electricity and magnetism, and heat, light, and sound. It is to be hoped that the succeeding volumes may equal that already published, which is the best book, for its purpose, we know of.

The school world is certainly to be congratulated on the addition to its literature of two such books as 'Properties of matter' and 'Practical physics.'

METHODS OF BACTERIA CULTURE.

THE need of a book in English, giving information as to the best methods of bacteria culture and observation, is a growing one; and, before opening the work under consideration, we were led to hope that it would fill, in a satisfactory manner, the vacancy that now exists.

We are disappointed in it, however, and for these reasons. A large number of methods and materials are described, staining-fluids are

given, and authors mentioned; but the whole is thrown together with little or no criticism, and the beginner is as likely to adopt the wrong as the right method of procedure. Particularly is this the case in that portion of the book giving the methods of staining the bacillus of tuberculosis. These methods have been pretty well tested and sifted out; and there is no reason why they should all be given at length, with no more criticism of their value than we find here. As far as investigation yet shows, Koch's or Ehrlich's methods are the ones which are to be absolutely relied upon. Gibbs's double method of staining is absolutely worthless, as the author should know.

The preface to the book states the author's hope that it will be of value to "American investigators, and assist them in adding their share . . . to the mass of facts concerning bacteria;" but surely it would have aided the student still more if he had been informed that all the materials for culture-media and staining-fluids can be obtained in this country as well as abroad.

The form of the book, being of thick paper, and opened with difficulty, is exceedingly inconvenient; and we cannot condemn too strongly the fact that over one-third of the space is taken up by the references, which are printed in the same type as the text.

THE PERMIAN REPTILES OF BOHEMIA.

OR this excellent work, we have now before us the first volume, and the first part of the second one, containing the Stegocephali Cope (Labyrinthodontia autorum); in all, two hundred and fourteen quarto pages text, and sixty plates, some of them folding. The present work is not only the best ever given on the subject, but one of the most valuable publications which has ever appeared in paleontology. The Lyell prize, awarded to the author by the Geological society of London, is one testimony to its excellence. The plates are among the best we have ever seen, and were all drawn by the author himself.

After an introduction showing the geological position of the fossils, a preliminary review of the fossils found is given, which consist of the following species: Stegocephali, 43; Diploï, 2; Pisces, 31; Insecta, 1; Arachnoidea, ?; Myriapoda, 3; Crustacea, 5; Mollusca, 1.

This is followed by a detailed history of the